

REMARKS

Indefiniteness

Claims 20, 24, and 27-30 currently stand rejected under 35 U.S.C. §112, second paragraph for failing to point out and distinctly claim the subject matter of the invention. Claim 20 is amended to omit the word "pigment", thus curing the problem of insufficient antecedent basis. Claims 24 and 27 - 30 are cancelled without prejudice, the Applicants reserving the right to pursue such claims in a continuation application. Thus the rejections of items 4 and 5 of the office action are overcome.

With regard to amended claim 20, the Applicants agree with item 6 of the office action to the extent that the claim does not state the precise composition of the combined mixture or the precise composition of the solutions used to make each mixture. The Applicants, however, maintain that a particular range of chemical compositions for the combined mixture is defined by the amended claim.

Amended claim 20 requires (i) the combination of the first-reactant/solvent mixture and the second-reactant solvent mixture have a total volume fraction of solids substantially in the range of 0.30 to 0.60; and (ii) the combination of the third-reactant/solvent mixture and the fourth-reactant solvent mixture have a total volume fraction of solids substantially in the range of 0.30 to 0.60; the claim is amended to omit the volume ratio limitations. A range of compositions of the combined mixtures is within the scope of the claim, as well as a range of individual mixture compositions. As stated in MPEP §2173.04, breadth of a claim is not to be equated with indefiniteness. Claim 20 includes all compositions that meet its limitations. Thus the claim is definite, and complies with the requirements of 35 U.S.C. §112, second paragraph.

Anticipation

Claims 15-16, 19, and 21-23 currently stand rejected under 35 U.S.C. §102(b) as being anticipated by Aizawa et al (U.S. Patent No. 4,501,790), as evidenced by Crast et al (U.S. Patent No. 6,365,679). In the interests of accelerating prosecution, the Applicants

amend claim 15, to further distinguish the claim over the cited art, and cancel claims 21 – 23, without prejudice. The Applicants, however, reserve the right to prosecute currently standing claims 15 and 21 - 23, and any claims dependent therefrom, in a continuation application, and do not address the patentability of currently standing claims 15 and 21 - 23 herein.

Amended claim 15 is a method claim directed to an in-mold method of forming a substrate “having a clear-coat surface” with a “high gloss finish”. Support for the amendments of the high gloss finish limitation is found at line 28 of page 6 – line 4 of page 7 of the application. Claim 15 also includes the limitation of the clear-coat and pigmented mixtures “sprayed in an amount to form a total coating layer thickness substantially between 3.0 to 4.0 mils DFT.” Support for this amendment may be found at lines 7 – 12 of page 13 of the application.

Aizawa does not anticipate claim 15 for three reasons: (i) the reference does not teach an in-mold method of forming a substrate having a clear coat; (ii) the reference does not teach an in-mold method of forming a substrate with a high gloss finish; and (iii) the reference does not teach an in-mold method of forming a substrate with a total coating layer thickness substantially between 3.0 to 4.0 mils DFT.

Aizawa does not teach an in-mold clear coat

As discussed in Applicants’ response to an earlier office action (response dated January 13, 2003) and during Applicants’ telephone interview with the Examiner on July 2, 2003, Aizawa does not teach an in-mold method of forming a clear coat on a substrate. Beginning at line 38, column 7, Aizawa teaches a coating sequence for preparing a urethane molding. The coating layers, from closest to the substrate to farthest away, are a primer coating film, a sealer coating film, and a top coating film (see lines 47-61, column 7).

A close examination of Aizawa reveals that the top coating film is not produced by an in-mold method, but by a method of spraying layers on a preformed substrate. First, Aizawa states at lines 56-60, column 7 that “a urethane-based coating material different from those of the primer . . . and the sealer . . . is *applied and baked to form the top coating film 6* on the surface of the sealer coating film” (emphasis added) in which

the films were applied to a preformed substrate. Second, lines 8-14 of column 8 state that “[t]he application of the *primer coating film* and the *sealer coating film 5* may be conducted by a spraying process . . . or by a mold coating process . . .” (the mold coating process of Aizawa corresponding to an in-mold coating process). Nowhere in Aizawa is the use of an in-mold method to make the *top coating film* revealed. Third, the discussion at lines 31-61 of column 8, referring to Figs. 6A – 6C that correspond to an in-mold coating method, do not show that a top coating film is ever made in by the mold coating process. To the extent that any top coating film is taught in Aizawa, such a coat is applied by spraying the coat onto a preformed substrate.

The sealer coating film of Aizawa cannot act as a clear coat. The composition of the sealer coating film for the mold coating process is shown on Table 3 in columns 9-10. Under the heading “Sealer”, pigment constituting talc and titanium oxide is revealed as a component of the sealer layer. Aizawa does not reveal making a sealer coating film that is free of pigment, or clear. The primer coating film of Aizawa also cannot act as a clear coat for the same reason. Thus Aizawa cannot anticipate the making of a clear coat, as required by claim 15.

Aizawa does not teach an in-mold high gloss finish

Aizawa also fails to teach an in-mold method of forming a substrate with a high gloss finish, as required by claim 15. As discussed during the telephone interview with the Examiner, Aizawa’s in-mold method requires the application of a releasing agent on the mold surface before the layers constituting the sealer and primer are applied (see lines 31-33, column 8). The Applicants maintain that use of such a releasing agent on the mold surface degrades the finish of the substrate surface, preventing the formation of a high gloss finish. Indeed, Aizawa reveals this limitation by stating that blur in the top coating film is eliminated by the sealer coating film preventing solvent from the top coating film from being absorbed into the primer coating film (see lines 54-57 of column 11). The sealer coating film is not subject to such protection being in direct contact with the primer coating film. Thus the sealer film cannot have the high gloss finish required by claim 15.

No part of the Aizawa patent teaches or suggests that the in-mold sealer coat or primer coat may be formed with a high gloss finish. Indeed, Aizawa's primary use of the primer layer is to smooth out the roughened substrate surface, the patent stating that "the surface of the primer coating film 3 is roughened by the flake-like aluminum" (see lines 47-49 of column 11). Aizawa reveals that the surface of the top coating film "becomes very smooth" (see lines 51-52, column 11), but as discussed earlier the top coating film is not produced by an in-mold method.

Aizawa does not teach an in-mold method of forming a substrate with a total coating layer thickness substantially between 3.0 to 4.0 mils DFT

Claim 15 provides a thickness limitation on the coating layers formed by the method. Specifically, claim 15 provides a thickness limitation of substantially 3.0 – 4.0 mils DFT upon the sum of the thicknesses of the clear-coat mixture and pigment mixture applied to the substrate.

As stated during the telephone interview, Aizawa does not teach an in-mold coating method capable of producing two coatings with a combined thickness of 3.0 – 4.0 mils. For the mold coating process of Aizawa, the primer coating film cannot exceed 25 μm (\approx 1.0 mils) before the film sags and the film surface becomes rough (see lines 56 – 60 of column 10), and the sealer coating film cannot exceed 35 μm (\approx 1.4 mils) before the film sags and becomes rough (see lines 7 – 9 of column 11). Thus, Aizawa is incapable of forming a combined film thickness greater than 2.4 mils before the films degrade.

In summary, Aizawa does not teach an in-mold coating method of forming a substrate having a clear coat with high gloss finish. Aizawa also does not teach applying two layers to a substrate by an in-mold method with a combined thickness of substantially 3.0 – 4.0 mils DFT. As well, Crast et al. is directed to applying a clear coat on a golf-ball, and in no way reveals an in-mold method. Thus claim 15 is not anticipated by the cited art and is allowable. Furthermore, claims 16 and 19 being dependent from claim 15 are allowable for the same reasons.

Obviousness

Claims 17, 18, 20 and 24 stand rejected under 35 U.S.C. § 103(a) as being obvious in light of some combination of Aizawa, Crast, and Matzinger et al (U.S. Patent No. 5,000,903). As maintained in the Applicants' response of January 13, 2003 and the arguments regarding anticipation, Aizawa and Crast do not teach an in-mold method capable of producing a clear coat with a high gloss finish, as required by claim 15. The references also do not teach the thickness limitations of the layers applied by the in-mold method of claim 15. Matzinger discloses a barrier web layer that acts as a protective coating for a substrate, but provides no teaching or suggestion of a clear coat with a high gloss finish. Thus Aizawa, Crast, and Matzinger do not teach all the necessary elements of claim 15. Since all other pending claims are dependent from claim 15, claim 24 being cancelled as discussed above, none of the pending claims are obvious; the cited art, failing to teach the necessary elements of the claim, cannot sustain a prima facie case of obviousness (see MPEP §2143). Thus claims 17, 18, and 20 are allowable over the cited art.

Conclusion

In view of the arguments and amendments presented, the Applicants respectfully request acceptance of claims 15 – 20.

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